

The Indiana Department of Transportation (INDOT), through its Traffic Monitoring Section, collects, summarizes and interprets information on the traffic traveling on the state's highway system. The data is used to assess transportation needs, system performance and to develop highway planning and programming recommendations. Traffic data also plays a very important role in route planning and in the design of highway projects.

To collect this information, the Department operates two traffic monitoring systems:

1. A Statewide Traffic Monitoring System consisting of 110 permanent continuous count stations that collect volume, speed and vehicle classification data 24 hours per day, 365 days per year. Fifty of these sites also utilize weigh-in motion (WIM) technology to collect continuous truck weight data. These sites are located throughout the state to monitor overall traffic trends. Information from these counters is used to determine ANNUAL TRAFFIC GROWTH trends as well as develop AXLE, WEEKDAY and SEASONAL adjustment factors used with the state's coverage count program to determine estimates of annual average daily traffic (AADT).
2. The statewide coverage count program utilizes portable traffic counters to collect 48 hour traffic counts on all State Highway System traffic sections and in rural and small urban areas and all highway performance monitoring sections (HPMS). The coverage count program operates on a three-year cycle, counting one-third of all sections annually, or approximately 10,000 of the 30,000 count sites. Where possible, portable classifiers are used so that approximately 65% of all coverage counts collected are classification counts. Additional counts are taken within this program to support specific state projects. INDOT is transitioning the coverage count data collection from a central office operation to the 6 INDOT districts. In addition INDOT also contracts with 3 Metropolitan Planning Organizations (MPOs) to collect coverage count data within their areas.

ADJUSTMENT FACTORS

Adjustment factors are necessary to convert an Average Daily Traffic (ADT) volume into an Annual Average Daily Traffic (AADT) estimate. Depending on the type of counter, the seasonal period of the setting, multiple factors may be necessary. These include axle, weekday and seasonal adjustment factors. For the 2/3's of the system not counted in the current year, the previously derived AADTs can be adjusted to the current year by utilizing the annual growth factors.

AXLE ADJUSTMENT FACTORS

There are times when portable classifiers cannot be set due to number of lanes or the lack of free-flow speeds. In these cases, portable traffic counters utilizing single pneumatic road-tubes stretched across a lane or roadway are used. These types of counters register two axle impacts as one vehicle so when vehicles with three or more

axles cross the road-tube they will be counted as multiple vehicles. Whenever possible axle adjustment factors should be developed from vehicle classification counters set on the same route within the vicinity of the axle counter and during the same relative time period. If this is not possible then the use of these factors applied by functional classification and volume groups are deemed acceptable.

WEEKDAY ADJUSTMENT FACTORS

The purpose of these factors is to normalize the variability of traffic counts that exists between counts taken during the weekday, Friday, Saturdays and/or Sundays. In developing the weekday factors we found no significant statistical difference in the Monday through Thursday trends and for this reason combine these into a weekday factor. This is further justified as counts taken for INDOT will usually span a Monday through Wednesday or a Tuesday through Thursday count period.

SEASONAL (MONTHLY) ADJUSTMENT FACTORS

Seasonal or monthly adjustment factors convert average daily traffic (ADT) to annual average daily traffic (AADT). Observed traffic volumes at a location often vary from month to month with higher summer traffic volumes and lower winter traffic volumes. To compare traffic volume data collected in different months, seasonal adjustment factors must be applied. The ADT is multiplied by the seasonal factor to obtain the AADT value. The continuous counter sites are grouped into five major factor groups (FG). Currently there are two urban factor groups and three rural factor groups which are based on grouped functional classifications.

ANNUAL GROWTH FACTORS

As not all road sections are counted each year, there are times when previous years AADTs will need to be factored in order to estimate current year values. Annual Growth Factors are used in these situations and are developed by comparisons of previous years AADTs at INDOT's 110 continuous counting telemetry sites and averaged for the five factor groups (FG).

Contact Information:

Kirk B. Mangold, Program Director
Traffic Monitoring Section
Indiana Department of Transportation
100 N. Senate Avenue N808 IGCN
Indianapolis, IN 46204
317-233-3690

kmangold@indot.IN.gov

SEASONAL ADJUSTMENT FACTORS BY FUNCTIONAL CLASS: 2002-2006

Urban - Interstates (11) , (Freeways and Expressways (12)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2006	1.111	1.069	1.032	0.999	0.971	0.944	0.963	0.959	0.978	0.983	1.014	1.048
2005	1.155	1.067	1.031	1.001	0.969	0.931	0.931	0.932	0.996	0.982	1.002	1.059
2004	1.186	1.086	1.049	1.004	0.997	0.920	0.951	0.938	0.966	0.978	1.009	1.065
2003	1.202	1.156	1.041	1.022	0.980	0.947	0.906	0.921	0.982	0.981	1.012	1.068
2002	1.141	1.088	1.057	1.021	0.980	0.926	0.944	0.923	0.982	0.969	0.985	1.046
5 YR AVG	1.159	1.093	1.042	1.009	0.979	0.934	0.939	0.935	0.981	0.979	1.004	1.057

Urban - Principal Arterials (14), Minor Arterials (16), Collectors (17) and Locals (19)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2006	1.067	1.019	1.023	0.985	0.975	0.952	0.984	0.966	0.983	0.971	1.019	1.027
2005	1.095	1.008	1.039	0.975	0.982	0.944	0.957	0.956	0.990	0.987	1.039	1.089
2004	1.114	1.016	1.004	0.972	0.971	0.941	0.989	0.972	0.961	0.976	1.032	1.062
2003	1.101	1.087	1.032	0.965	0.965	0.979	0.980	0.969	0.978	0.979	1.024	1.051
2002	1.117	1.068	1.081	0.986	1.002	0.951	0.969	1.001	0.953	0.999	1.042	1.096
5 YR AVG	1.099	1.040	1.036	0.977	0.979	0.953	0.976	0.973	0.973	0.982	1.031	1.065

Rural - Interstates (01)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2006	1.177	1.131	1.048	1.012	0.973	0.909	0.906	0.912	0.985	0.975	0.997	1.078
2005	1.222	1.120	1.044	1.021	0.961	0.900	0.878	0.905	1.002	0.985	0.999	1.087
2004	1.246	1.126	1.040	0.984	0.992	0.912	0.895	0.896	0.959	0.982	1.011	1.114
2003	1.223	1.239	1.070	1.032	0.967	0.925	0.887	0.909	0.982	0.971	0.987	1.043
2002	1.207	1.141	1.049	1.009	0.949	0.913	0.887	0.879	0.975	0.967	1.030	1.069
5 YR AVG	1.215	1.151	1.050	1.012	0.968	0.912	0.891	0.900	0.981	0.976	1.005	1.078

Rural - Principal Arterials (02) and Minor Arterials (06)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2006	1.087	1.055	1.028	0.991	0.965	0.936	0.963	0.971	0.977	0.994	1.032	1.062
2005	1.164	1.074	1.046	0.988	0.940	0.907	0.921	0.934	0.974	0.985	1.042	1.103
2004	1.198	1.091	1.038	0.987	0.962	0.918	0.917	0.925	0.957	0.992	1.040	1.104
2003	1.166	1.149	1.064	1.013	0.954	0.905	0.906	0.903	0.956	0.964	1.024	1.086
2002	1.126	1.086	1.091	1.021	0.933	0.935	0.939	0.903	0.976	0.992	1.056	1.096
5 YR AVG	1.148	1.091	1.053	1.000	0.951	0.920	0.929	0.927	0.968	0.985	1.039	1.090

Rural - Major Collectors (07), Minor Collectors (08) and Locals (09)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2006	1.095	1.060	1.037	0.973	0.946	0.925	0.958	0.960	0.972	0.997	1.029	1.058
2005	1.123	1.066	1.060	0.980	0.958	0.936	0.937	0.928	0.982	0.980	1.032	1.110
2004	1.180	1.081	1.056	0.973	0.941	0.948	0.948	0.966	0.948	0.973	1.016	1.064
2003	1.105	1.140	1.059	1.011	0.956	0.937	0.954	0.989	0.994	0.998	1.033	1.087
2002	1.111	1.075	1.099	1.006	0.950	0.893	0.970	0.928	1.027	0.989	1.065	1.130
5 YR AVG	1.123	1.084	1.062	0.989	0.950	0.928	0.953	0.954	0.985	0.987	1.035	1.090

Note: The seasonal adjustment factors are used to expand average 24-hour volumes to estimated Annual Average Daily Traffic (AADT).

2006 WEEKDAY FACTORS

URBAN - INTERSTATES (11), FREEWAYS AND EXPRESSWAYS (12)

	Average	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekdays	0.956	0.940	0.934	0.950	0.943	0.962	0.960	0.987	0.972	0.962	0.961	0.949	0.953
Friday	0.865	0.858	0.857	0.852	0.874	0.855	0.864	0.862	0.868	0.857	0.863	0.904	0.864
Saturday	1.134	1.159	1.189	1.131	1.173	1.141	1.139	1.075	1.125	1.136	1.113	1.139	1.087
Sunday	1.328	1.438	1.436	1.357	1.349	1.291	1.310	1.211	1.235	1.321	1.298	1.293	1.396

URBAN - PRINCIPAL (14) AND MINOR ARTERIALS (16), COLLECTORS (17) AND LOCALS (19)

	Average	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	0.955	0.956	0.948	0.953	0.947	0.956	0.944	0.957	0.956	0.976	0.961	0.948	0.966
Friday	0.871	0.859	0.870	0.865	0.882	0.880	0.871	0.867	0.867	0.864	0.868	0.898	0.860
Saturday	1.092	1.065	1.098	1.083	1.098	1.088	1.126	1.111	1.105	1.074	1.076	1.106	1.070
Sunday	1.396	1.460	1.437	1.416	1.421	1.371	1.421	1.365	1.365	1.344	1.375	1.379	1.395

RURAL - INTERSTATES (01)

	Average	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	1.007	0.968	0.976	1.010	0.994	1.017	1.021	1.041	1.026	1.019	1.028	1.007	0.975
Friday	0.848	0.856	0.830	0.837	0.859	0.826	0.829	0.855	0.857	0.821	0.831	0.902	0.873
Saturday	1.087	1.150	1.155	1.082	1.135	1.078	1.093	1.012	1.062	1.074	1.073	1.089	1.045
Sunday	1.118	1.232	1.229	1.119	1.106	1.099	1.065	1.026	1.035	1.102	1.056	1.038	1.310

RURAL - PRINCIPAL (02) AND MINOR ARTERIALS (04)

	Average	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	0.972	0.946	0.944	0.965	0.955	0.988	0.983	1.000	0.988	1.000	0.987	0.955	0.958
Friday	0.860	0.849	0.847	0.850	0.869	0.856	0.863	0.866	0.863	0.841	0.855	0.890	0.872
Saturday	1.083	1.140	1.154	1.099	1.120	1.057	1.059	1.031	1.060	1.030	1.046	1.118	1.076
Sunday	1.323	1.471	1.450	1.379	1.351	1.258	1.265	1.208	1.235	1.246	1.275	1.333	1.399

RURAL - MAJOR (07) AND MINOR COLLECTORS (08) AND LOCALS (09)

	Average	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weekday	0.974	0.959	0.948	0.964	0.964	0.980	0.984	0.994	0.978	0.995	0.984	0.966	0.974
Friday	0.868	0.851	0.861	0.865	0.878	0.875	0.870	0.858	0.875	0.852	0.865	0.895	0.871
Saturday	1.060	1.098	1.123	1.080	1.052	1.045	1.022	1.036	1.062	1.033	1.020	1.075	1.068
Sunday	1.289	1.395	1.389	1.325	1.282	1.243	1.265	1.236	1.237	1.238	1.268	1.302	1.290

	RURAL				URBAN		
	INT ART COL				INT ART/ COL		
	Average				Average		
Weekday	0.984	1.007	0.972	0.974	0.956	0.956	0.955
Friday	0.859	0.848	0.860	0.868	0.868	0.865	0.871
Saturday	1.076	1.087	1.083	1.060	1.113	1.134	1.092
Sunday	1.243	1.118	1.323	1.289	1.362	1.328	1.396

Note: Weekday factors are used to normalize the variability of traffic counts that exists between counts taken on the Weekday, Friday, Saturday and or Sunday.

AVERAGE AXLE ADJUSTMENT FACTORS (2004-2006)

Urban - Interstate (11) Freeways and Expressways (12)				
Volume Groups	1 to 4000	4001 to 10000	10001 to 30000	30001 and up
2004	0.914	0.874	0.811	0.825
2005	0.914	0.844	0.847	0.872
2006	0.902	0.902	0.794	0.848
AVERAGE 04-06	0.910	0.874	0.817	0.849

Urban - Principal (14) and Minor Arterials (16), Collectors (17)				
Volume Groups	1 to 7000	7001 to 12000	12001 to 20000	20001 and up
2004	0.928	0.924	0.938	0.936
2005	0.928	0.928	0.841	0.918
2006	0.978	0.959	0.945	0.940
AVERAGE 04-06	0.945	0.937	0.908	0.931

Rural - Interstate (01), Principal (02) and Minor Arterials (06)				
Volume Groups	1 to 5000	5001 to 7000	7001 to 10000	10001 and up
2004	0.859	0.845	0.846	0.842
2005	0.858	0.854	0.858	0.854
2006	0.867	0.963	0.843	0.865
AVERAGE 04-06	0.861	0.887	0.849	0.854

Rural - Major Collectors (07), Minor Collectors (08)				
Volume Groups	1 to 1200	1201 to 2400	2401 to 4000	4001 and up
2004	0.929	0.913	0.908	0.927
2005	0.938	0.922	0.717	0.925
2006	0.922	0.916	0.925	0.932
AVERAGE 04-06	0.929	0.917	0.850	0.928

Locals (09 or 19)				
	Rural (09)	Urban (19)		
2004	0.969	0.976		
2005	**	**		
2006	0.965	0.983		
AVERAGE 04-06	0.967	0.979		

Note: These factors are used to eliminate excess vehicles generated by axle counters.

** (In 2005 There were insufficient data samples to develop unique Rural & Urban Local grouping)

ANNUAL GROWTH FACTORS BY FUNCTIONAL CLASS 1997 - 2006

	YEAR OF COUNT:									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
YEAR TO:										
URBAN - INTERSTATES (11), FREEWAYS & EXPRESSWAYS (12)										
1997	-	0.963	0.928	0.933	0.859	0.830	0.805	0.795	0.775	0.788
1998	1.038	-	0.963	0.968	0.892	0.861	0.836	0.826	0.805	0.818
1999	1.077	1.038	-	1.005	0.925	0.894	0.867	0.857	0.835	0.849
2000	1.072	1.033	0.995	-	0.921	0.890	0.863	0.853	0.831	0.845
2001	1.164	1.122	1.081	1.086	-	0.966	0.937	0.926	0.903	0.918
2002	1.205	1.161	1.118	1.124	1.035	-	0.970	0.958	0.934	0.950
2003	1.242	1.197	1.153	1.159	1.067	1.031	-	0.988	0.963	0.979
2004	1.257	1.211	1.167	1.173	1.080	1.043	1.012	-	0.975	0.991
2005	1.290	1.243	1.197	1.203	1.108	1.070	1.038	1.026	-	0.983
2006	1.268	1.222	1.177	1.183	1.089	1.053	1.021	1.009	1.017	-

URBAN - PRINCIPAL (14) & MINOR ARTERIALS (16), COLLECTORS (17) AND LOCALS (19)

1997	-	0.978	0.962	0.930	0.902	0.851	0.862	0.872	0.871	0.865
1998	1.023	-	0.984	0.952	0.922	0.870	0.882	0.892	0.891	0.885
1999	1.039	1.016	-	0.967	0.937	0.884	0.896	0.907	0.906	0.899
2000	1.075	1.051	1.034	-	0.969	0.914	0.926	0.937	0.936	0.930
2001	1.109	1.084	1.067	1.032	-	0.943	0.956	0.967	0.966	0.960
2002	1.176	1.149	1.131	1.094	1.060	-	1.013	1.025	1.024	1.017
2003	1.160	1.134	1.116	1.080	1.046	0.987	-	1.012	1.011	1.004
2004	1.146	1.121	1.103	1.067	1.034	0.975	0.988	-	0.999	0.992
2005	1.148	1.122	1.104	1.068	1.035	0.976	0.989	1.001	-	0.993
2006	1.156	1.130	1.112	1.075	1.042	0.983	0.996	1.008	1.007	-

RURAL - INTERSTATES (01)

1997	-	0.965	0.934	0.975	0.944	0.900	0.896	0.884	0.880	0.873
1998	1.036	-	0.968	1.010	0.978	0.933	0.928	0.916	0.911	0.904
1999	1.070	1.033	-	1.044	1.010	0.963	0.959	0.946	0.941	0.934
2000	1.025	0.990	0.958	-	0.968	0.923	0.918	0.906	0.902	0.895
2001	1.059	1.022	0.990	1.033	-	0.953	0.949	0.936	0.932	0.924
2002	1.111	1.072	1.038	1.084	1.049	-	0.995	0.982	0.977	0.970
2003	1.117	1.078	1.043	1.089	1.054	1.005	-	0.987	0.982	0.974
2004	1.131	1.092	1.057	1.103	1.068	1.018	1.013	-	0.995	0.987
2005	1.137	1.097	1.062	1.109	1.073	1.023	1.018	1.005	-	0.992
2006	1.146	1.106	1.071	1.118	1.082	1.031	1.026	1.013	1.008	-

RURAL - PRINCIPAL (02) & MINOR ARTERIALS (06)

1997	-	0.955	0.953	0.996	0.975	0.962	0.984	0.957	0.958	0.949
1998	1.047	-	0.998	1.043	1.020	1.007	1.030	1.002	1.003	0.994
1999	1.049	1.002	-	1.045	1.022	1.009	1.032	1.004	1.005	0.996
2000	1.004	0.959	0.957	-	0.978	0.966	0.988	0.961	0.962	0.953
2001	1.026	0.980	0.978	1.022	-	0.987	1.009	0.982	0.983	0.974
2002	1.039	0.993	0.991	1.035	1.013	-	1.022	0.995	0.996	0.987
2003	1.017	0.971	0.969	1.013	0.991	0.978	-	0.973	0.974	0.965
2004	1.045	0.998	0.996	1.041	1.018	1.005	1.028	-	1.001	0.992
2005	1.044	0.997	0.995	1.040	1.017	1.004	1.027	0.999	-	0.991
2006	1.053	1.006	1.004	1.049	1.027	1.013	1.036	1.008	1.009	-

RURAL - MAJOR (07) & MINOR COLLECTORS (08) AND LOCALS (09)

1997	-	1.001	0.971	0.925	0.927	0.907	0.904	0.900	0.912	0.917
1998	0.999	-	0.970	0.924	0.926	0.906	0.903	0.899	0.911	0.916
1999	1.030	1.031	-	0.952	0.954	0.934	0.931	0.927	0.939	0.944
2000	1.081	1.083	1.050	-	1.002	0.980	0.978	0.974	0.986	0.991
2001	1.079	1.080	1.048	0.998	-	0.978	0.976	0.972	0.984	0.989
2002	1.103	1.104	1.071	1.020	1.022	-	0.997	0.993	1.006	1.011
2003	1.106	1.107	1.074	1.023	1.025	1.003	-	0.996	1.009	1.014
2004	1.111	1.112	1.078	1.027	1.029	1.007	1.004	-	1.013	1.018
2005	1.096	1.097	1.064	1.014	1.016	0.994	0.991	0.987	-	1.005
2006	1.091	1.092	1.059	1.009	1.011	0.989	0.986	0.982	0.995	-

Note: Factors in this table are used to adjust previous year AADTs to a more current year for similarly classed roads (e.g. to adjust a 2004 urban interstate AADT to a 2006 equivalent, you would multiply the 2004 AADT by 1.009). This table is completely updated and supersedes any previous listing of year-to-year adjustment factors.